



# THE MULTIPLE LEARNING EXPERIENCES (MLEx™) MODEL

## TEACHING AND LEARNING AS ACTS OF ENGAGEMENT

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better teachers make better students™



**TATA CLASSEGE**

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# INTRODUCTION

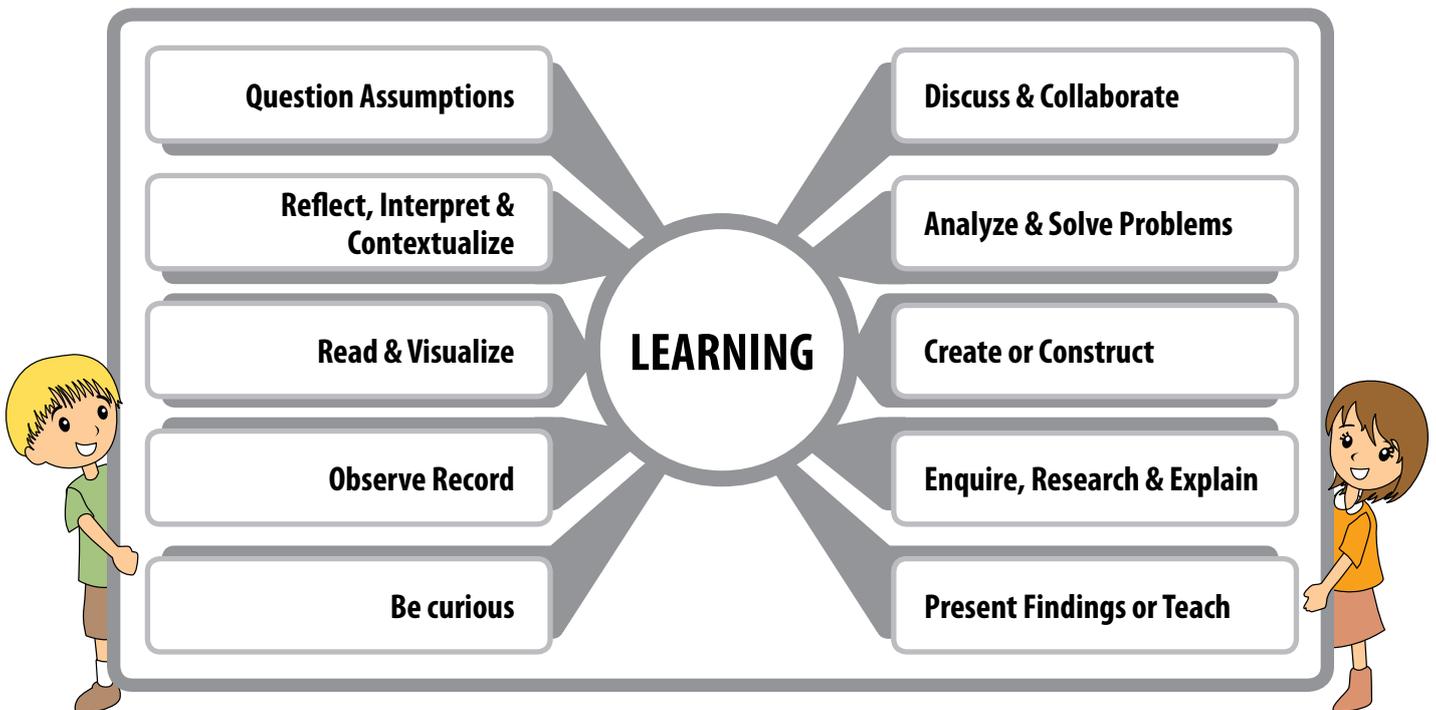
Before we recommend an instructional model to be adopted in schools, we need to be clear on two things:

1. What is the purpose of education?
2. What constitutes learning?

Of course, views differ on what constitutes the purpose of education. But here is what we believe:

- Education must provide students with the tools for thinking, problem-solving and creating new things.
- It must encourage them to question what is being taught.
- It must inculcate in students a certain sense of social justice.
- It must provide students with the ability to be sensitive to gender, social and cultural differences.
- It must leave them with the hunger to continue learning through life.

As for learning, it involves many things—not just the ability to retain and reproduce what is taught.



# ICT In Schools

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In the instructional framework for Tata ClassEdge—our technology enabled learning solution for K-12 schools—the use of information and communication technology (ICT) in classrooms is a significant component. Technology makes it possible for students to visualize what they cannot see in real life (for example, the structure of an atom); it helps them manipulate values like temperature and pressure and see their impact on objects; it helps them connect to a world of resources, experts and curious peers. Technology helps teachers to avoid having to do complex drawings in every class, represent effective visualizations and lead their students beyond textbooks and classrooms.

However, when we studied the use of ICT in many schools in India, we realized that the focus was on delivering learning content through the use of multimedia. However, the traditional lecture method and the new multimedia mode seemed to share the same assumption—that education is nothing but the transfer of information. That it is a one-way traffic: it either flows from the teacher to the students or from the smart-board to the students. The student remains a passive body whose only responsibility is to assimilate information and answer questions during tests.

What is in this for students, except that they now get to see a few concepts in visual form? First we used “chalk and talk”; with the introduction of multimedia, we now move to “observe and listen” (at times followed by multiple-choice quizzes and online tests). But can we call this education design? While it is a practical necessity for students to score decent grades in exams, is it the only purpose of education? Is it enough to teach to achieve predictable learning outcomes? If the aim of education is to equip students to set goals for themselves (not just to pursue given goals), then this approach to education is regressive.

## Introducing MLEx

The Tata ClassEdge instructional framework, the Multiple Learning Experiences (MLEx™) Model, aims to make the teaching-learning process more experiential and inquiry-oriented.

The model is developed on the following premises (and each premise can be supported by the use of technology and real interactions):

1. Learning has multiple dimensions: understanding, application, critical thinking, creativity, peer interaction and communication.
2. The teaching-learning process should include multisensory experiences (visual, auditory, verbal and kinaesthetic) to enable students to experience learning across different modalities.
3. Meaningful multisensory activities need to be designed to promote each dimension of learning.

		Multiple Dimensions of Learning					
		Understanding	Application	Critical Thinking	Creativity	Peer Interaction & Communication	
Multisensory Modalities	Visual-Auditory	Demonstrative media (animations & slideshows), graphic organizers	Interactive media and labs	Puzzles, simulators, spatial skills worksheets	Art projects, Student Presentations	Student Presentations	
	Verbal	Reinforcement worksheets	Application Worksheets	Problem-solving/ decision-making "challenge" Worksheets	Creative writing, debates, role-plays, research projects	Whole class and group discussions	
	Kinaesthetic	Hands-on activities (Recall activities)	Hands-on "challenge" activities (Application-oriented activities—E.g. Measurements & observation, electric circuits.)	Hands-on "challenge" activities (Higher-order thinking activities—E.g. Drawing conclusions from an experiment.)	Hands-on models & Craft	Hands-on models & projects	

The intention of this framework is to enable teachers to resist fixed patterns of teaching, build on the natural curiosity of children, and convert the classroom into an active learning space (as opposed to passive transfer of information). Therefore, Tata ClassEdge lesson plans, which are built on the MLEx™ model, lay stress on designing activities that provide multiple experiences to children—experiences that arouse their curiosity and are engaging, explorative and participative.

### ■ **Multisensory Activities**

Studies show that the human brain has evolved to develop, learn and operate optimally in multisensory environments. So, when more senses are involved in learning, the better it is for retention. Therefore, each teaching point within a lesson contains multisensory activities that are well-aligned to the content. Over the course of a lesson, children will have enough opportunities to do hands-on activities, discuss or debate, narrate or listen to stories, solve problems, play with peers and interact with multimedia.

The activities are a combination of not just different modalities (visual, auditory, verbal, and kinaesthetic) and levels of difficulty but are also a blend discovery and practice activities. Discovery activities help students grasp the content through active exploration and inquiry whereas practice activities enable them to apply their understanding, question assumptions and improve their performance through effective feedback.

Research says that spaced repetition and practice aid retention. Therefore, by including different types of activities to teach each topic within a lesson plan, what we are really doing is providing opportunities for spaced and repeated practice for students without the monotony of repetition.

The activities are designed in such a way that in the process of mastering the topics, students also develop:

- Social Skills (interpersonal, communication, presentation and collaboration skills)
- Thinking Skills (creative thinking, critical thinking, problem solving and decision making)
- Research orientation
- Metacognition
- Interdisciplinary learning
- Information and Communication Technology (ICT) Skills

## ■ Group Activities and Projects

Group activities and projects focus on enhancing metacognitive skills. They help children to:

- Set realistic goals
- Determine the best ways to achieve that goal
- Monitor their progress
- Make adjustments where required through trial and error

Moreover, in social sciences, the activities are carefully designed to ensure students are sensitised to social and economic discrimination, gender and community biases, multiple points of view on history and civic responsibilities.

## ■ Plug Points and Differentiated Activities

The MLEx™ model makes use of interdisciplinary correlations, called Plug Points, which link one subject to another or to contemporary events and research.

There are differentiated activities as well (“Reinforcement” and “Challenge”) for struggling students and high achievers. However, it is important to note that “struggling students” and “high achievers” are not permanent labels. For instance, a high achiever in math could be a struggling learner in languages. Moreover, we don’t recommend that teachers divide the class into high achievers and struggling students and administer these activities to separate groups. Both kinds of activities could be administered to the whole class. Students will be paired intelligently for the “Challenge” activities so that even struggling students participate in solving such questions.

## ■ The Use of Multimedia

Multimedia is used only as a teaching aid. It doesn’t take away the significant role of a teacher in the classroom. The media is used not just to explain a topic but to generate interest in the subject as well. Considering the low attention span of students and their ability to retain only limited amount of information at a time in a whole class environment, the maximum duration of multimedia is limited to just five minutes.

Media is used to provide the main idea of the topic and the lesson plans provide tips to teachers to peg the details around the main idea. This is because, according

to studies (John Medina 2009), the human brain processes the meaning or the big picture before processing the details.

Also, the lesson plans provide tips to get children to verbalise what they see in a multimedia demonstration. For example, the teacher could ask some questions related to the media or stop the media midway and ask students to predict what is going to happen next.

In addition to animations, Tata ClassEdge also has several digital tools in mathematics and science (such as lenses, mirrors and geometry tiles) which can either be used by teachers as teaching tools or by students in computer laboratories.

### **Multimedia and Still Images: Cultural Sensitivity in Visual Representation**

The images that a child is exposed to can have a deep impact on the way biases and stereotypes are formed in his or her mind. For example, if the textbook and supporting materials show peasants as semi-literate, poor, and incapable of a scientific worldview, children are most likely to imbibe that view unless they question it at some point in their life. The fact that stereotypes still play a large role in mass media only tells us that many of us do not question our assumptions.

Here is a sample checklist that our media developers use to avoid biases and ensure a certain level of sensitivity in the way we depict visuals:

#### **Gender Sensitivity**

1. Is there any gender stereotyping in our media representation?
  - a. Are nurses and teachers always women?
  - b. Are doctors and engineers always men?
  - c. Is it always the mother who works in the kitchen?
  - d. Are women/girl children shown as needing male support to get things done?

(Obviously the answers to the question given above should be in the negative.)

Gender discrimination cannot be taken care of by just having an equal number of male and female characters. Who is the main actor or agent of change? What is the setting, the action and the purpose of the scenario? We need to be sensitive about biases creeping into any of these.

**Class and Urban/Rural Sensitivity**

2. How are lower classes represented? (Avoid the typical social advertising format— sympathy evoking faces, ragged clothes, submissive expressions, etc.—and highlight their sense of self-respect.)
3. Are all scenarios set only in an urban middle class milieu? (Use a mix of rural and urban scenarios in varied contexts.)
4. How is rural India represented? Is it represented in the typical “illustrated story” style—huts, mud roads, and old men on a charpoy? (Avoid clichéd representations and represent the diversity of rural India.)

**Sensitivity Towards Adivasis and Dalits**

5. How are adivasi societies and dalits represented? (Highlight their sensitivity to the environment, and their sense of self-respect without romanticizing some of their traditional professions.)

# MLEx™ ACTIVITY TYPES

The table below provides a list of activities used in the model. Each activity is denoted by an icon in the Tata ClassEdge lesson plans. Some activities are intended to help students discover concepts for themselves, while others serve as practice activities.

The table also indicates the learning dimensions, modalities and life skills (although these will depend on the exact nature and specific content of the activities).

	Activity Icon	Dimension	Modality	Life Skills
1	<b>Play</b> Role-plays, group games, multimedia games	Understanding, Creativity, Communication	Verbal, Visual-Auditory, Kinaesthetic	<b>Role-play:</b> Facing an audience, communication skills <b>Group Games:</b> Peer Interaction, Decision Making <b>Multimedia Games:</b> Problem Solving, Decision Making
2	<b>Share</b> This is a paired/group activity.	Understanding, Communication	Verbal, Visual-Auditory (For hands-on activities, the kinaesthetic modality applies, too.)	Peer interaction
3	<b>Think</b> An activity that typically involves higher-order thinking skills (this could be a group or individual activity): <ul style="list-style-type: none"> <li>• Fact &amp; Opinion</li> <li>• Drawing Inferences</li> <li>• Predicting Consequences</li> <li>• Breaking down a problem into component parts</li> <li>• Identifying the main idea/problem</li> </ul>	Critical Thinking, Creativity	Verbal, Visual (could also include Auditory and Kinaesthetic modalities, depending on the nature of the activity.)	Logical thinking, creative thinking, problem solving, decision making
4	<b>Talk</b> Whole class discussions, group discussions, debates, story-telling, summarising	Communication	Verbal, Auditory	Communication skills, peer interaction, creativity (for story telling), critical thinking (depending on the nature of the topic being discussed)

	Activity Icon	Dimension	Modality	Life Skills
5	<p><b>Hunt</b> Projects (group or individual)</p> <p>Projects are always followed up with a presentation where students talk about their findings. Projects are age-appropriate and can be done without much adult support.</p>	Application, Critical Thinking, Communication	Verbal, Visual- Auditory	Information gathering, critical thinking, creativity, metacognition, presentation skills, ICT skills (if the students are using computer and the Web to develop the project )
6	<p><b>Lit</b> Making picture stories or rhymes (for primary classes)</p> <p>Developing a story or writing a poem around a given topic (for secondary and high school students)</p>	Creativity, Communication	Verbal, Visual	Writing skills, creativity
7	<p><b>Art</b> Colouring, painting, sketching, collages, card making, craftwork, clay-modelling, origami, poster making, creating advertising campaigns, etc.</p>	Creativity, Communication	Verbal, Visual	Artistic skills, creativity
8	<p><b>Word</b> Crossword Word Search Word Jumble</p>	Understanding	Verbal, Visual	Problem solving, logical thinking
9	<p><b>Trip</b> Field trips</p>	Understanding	Visual, Verbal, Auditory, Kinaesthetic	Observation and recording
10	<p><b>Media</b> - Multimedia demonstrations - Animations - Click &amp; Explore Demonstrations - Slideshows</p>	Understanding	Verbal, Visual- Auditory	Observation and recording
11	<p><b>Interactive</b> Multimedia interactivities (except Games which come under <b>Play</b>)</p>	Application	Verbal-Visual- Auditory (Could include Musical)	Problem solving, decision making, ICT skills

# WHY MLE<sup>x</sup>™

Children are natural learners. They learn through experiences and by tinkering with things. They learn by observing things and asking questions. They learn in ways we can't even imagine. Technology alone will be able to do precious little if it is introduced without concern for the way children learn and make sense of things. We need an adoption model that integrates technology with effective teaching-learning practices. We need to provide scaffolding and space for students to learn on their own. After all, we should not introduce technology because it "has to be introduced" but because it has the potential to improve learning outcomes.

As a start, classrooms should promote an environment of inquiry, experimentation and dialogue. We should recognize the porous borders that compartmentalize different subjects. We should acknowledge the differences in aptitude and provide room for each child to build on his or her strengths.

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The following books and papers have inspired us in the design of MLEx™:

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